

ABSTRACT OF THE DISCLOSURE

An edge-coupled photodetector, especially a compound semiconductor edge-coupled photodetectors, has a light funnel integrated right in front of the coupling aperture for enhancing the optical coupling efficiency. The light funnel is formed utilizing either a wet etched, crystallographically defined semiconductor slope or a dry etched, resist-profile-defined semiconductor slope covered by the planarized dielectrics. The funnel internals can be partially or fully metallized for total mirror reflection. The lightwave entering the funnel and propagating along the optical axis converges through mirror reflection or total internal reflection. Through such an invention, the edge-coupled photodetector can have both high operation speed and high quantum efficiency with enlarged alignment tolerance.